

STRENGTHENING INTERNAL PRODUCTION CAPACITY OF COFFEE BUSINESS AMONG SMES IN PURBALINGGA REGENCY

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Abstract

Coffee-based Small and Medium Enterprises (SMEs) play a strategic role in promoting rural economic development and increasing value addition in Indonesia's coffee industry. However, many coffee SMEs continue to encounter operational challenges that constrain business growth, including limited production planning, inconsistent quality control, inadequate standard operating procedures, inefficient production workflows, and suboptimal utilization of processing equipment. These constraints weaken production efficiency, reduce product consistency, and limit the ability of SMEs to respond to increasing market demand. This community service program aimed to strengthen the internal production scale of coffee businesses among SMEs in Purbalingga Regency through an integrated capacity-building approach. The program adopted a participatory community empowerment method consisting of four stages: (1) preliminary assessment to identify production-related constraints, (2) technical training and mentoring, (3) implementation of production system improvements, and (4) monitoring and evaluation of production performance. The intervention focused on five strategic components: production process standardization, quality control enhancement, human resource capacity building, and production performance monitoring. Data were collected through field observations, interviews, documentation, and participatory evaluation involving SME owners and workers. The implementation of the program resulted in significant improvements in the organization of production activities and strengthened the operational capacity of participating SMEs. Business owners demonstrated enhanced understanding and application of standardized production procedures, more efficient production workflows, improved quality control practices, and better production planning and monitoring. The mentoring activities also fostered greater awareness of continuous improvement and evidence-based production management, thereby supporting more consistent product quality and more efficient resource utilization.

Keywords: coffee SMEs, internal production capacity, production management, capacity building, competitiveness

INTRODUCTION

Coffee has become one of the world's most strategic agricultural commodities because of its contribution to rural economic development, employment generation, export earnings, and the sustainability of agricultural livelihoods. In Indonesia, the coffee sector is increasingly recognized not only as a source of export revenue but also as a driver of local economic development through the rapid growth of small and medium enterprises (SMEs) engaged in coffee processing, roasting, packaging, and specialty coffee businesses. The increasing demand for premium coffee products, together with the expansion of domestic coffee consumption, has created significant opportunities for coffee SMEs to improve their competitiveness through innovation and value creation (Hanley et al., 2026; Kresnawati et al., 2025).

Despite this favorable market development, many coffee SMEs in Indonesia continue to experience structural constraints that hinder business growth. Recent studies reveal that limited production capacity, inadequate processing technology, inconsistent quality control, weak production planning, and insufficient operational management remain major obstacles preventing SMEs from capturing greater value within the coffee value chain. Consequently, many enterprises

remain concentrated in low-value processing activities and experience difficulties in meeting increasing market demand and quality standards (Kresnawati et al., 2025; Irjayanti et al., 2025).

The transformation of the global coffee industry has further increased the importance of strengthening internal production capability. Recent coffee value chain studies indicate that enterprise competitiveness is no longer determined solely by production volume but increasingly by the ability to undertake process upgrading, product upgrading, technological innovation, and organizational improvement. Coffee SMEs that successfully improve production efficiency, standardize operational procedures, and implement effective quality management systems are more capable of generating higher value-added products and expanding their market reach (Suprehatin, 2025; Alam, 2026; Yusuf et al., 2026).

Purbalingga Regency possesses considerable potential for coffee agribusiness development because of its favorable agro-climatic conditions and increasing participation of local farmers and coffee entrepreneurs, particularly in highland districts such as Karangreja, Karangjambu, Karangmoncol, Bobotsari, and Rembang. In recent years, coffee cultivation and processing activities have continued to expand across several highland areas, accompanied by growing enthusiasm among young farmers and local coffee communities. The increasing market price of both Arabica and Robusta coffee has also stimulated greater interest in coffee farming and downstream business development in the region (Government of Purbalingga Regency, 2025).

However, despite these promising opportunities, many coffee SMEs in Purbalingga continue to operate on relatively small production scales characterized by traditional processing methods, limited production equipment, inconsistent production scheduling, inadequate quality assurance, and weak production management. These operational limitations reduce production efficiency, constrain product consistency, and restrict SMEs from fulfilling larger market demand or entering higher-value market segments. Similar conditions have also been reported in other Indonesian coffee-producing regions, where weak internal production systems reduce the competitiveness of local coffee enterprises despite favorable production potential (Wau et al., 2026; Irjayanti et al., 2025).

From the perspective of community empowerment, strengthening the internal production scale represents a strategic intervention because production capability forms the operational foundation of SME competitiveness. Community service programs that focus on production management, standard operating procedures (SOPs), quality control, equipment utilization, production planning, and appropriate technology adoption are more likely to produce sustainable improvements than interventions emphasizing marketing activities alone. Such programs enable SMEs to improve operational efficiency, product consistency, production capacity, and organizational capability, thereby creating long-term business resilience (Kresnawati et al., 2025; Wau et al., 2026; Hanley et al., 2026).

Although previous studies have extensively discussed coffee value chains, digital marketing, sustainability, and market competitiveness, relatively few community service programs specifically emphasize strengthening the internal production scale of coffee SMEs through improvements in production systems, operational management, and production capability. This gap indicates the need for community-based interventions that prioritize strengthening internal operational capacity as the foundation for increasing SME competitiveness and supporting sustainable local economic development (Suprehatin, 2025; Kresnawati et al., 2025).

Therefore, this community service program aims to strengthen the internal production scale of coffee businesses among SMEs in Purbalingga Regency through integrated mentoring activities covering production planning, process standardization, quality control, production management, and appropriate technology utilization. By improving internal production capability, the program is expected to increase production efficiency, product consistency, value creation, and the long-term competitiveness of local coffee SMEs.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

1. Coffee SMEs and Internal Production Capability

Small and Medium Enterprises (SMEs) constitute the backbone of Indonesia's coffee industry because they connect primary production with processing, product development, and market distribution. Beyond creating employment opportunities, coffee SMEs contribute significantly to local value creation and rural economic development. However, many coffee SMEs continue to face structural constraints, including limited production capacity, inadequate processing technology, inconsistent quality management, and weak operational planning, all of which reduce their competitiveness in domestic and international markets (Hanley et al., 2026; Kresnawati et al., 2025). Recent empirical evidence further indicates that strengthening internal production capability is one of the most effective strategies for improving productivity, increasing product quality, and enhancing SMEs' resilience in increasingly competitive coffee markets (Kresnawati et al., 2025; Yusuf et al., 2026).

Internal production capability extends beyond production volume. It encompasses production planning, workflow efficiency, equipment utilization, labor competency, inventory management, quality assurance, process standardization, and continuous operational improvement. SMEs with stronger internal production systems are generally better able to produce consistent quality, reduce operational costs, increase production flexibility, and respond effectively to changing consumer demand. Consequently, internal production capability has become one of the principal determinants of long-term business sustainability among coffee SMEs (Yusuf et al., 2026; Irijayanti et al., 2025).

2. Value Chain in the Coffee Industry

The coffee industry has undergone significant structural transformation during the last decade due to increasing demand for specialty coffee, sustainability certification, product traceability, digitalization, and global market integration. Consequently, the coffee value chain has become increasingly complex, involving interactions among farmers, cooperatives, processors, SMEs, distributors, retailers, and consumers (Suprehatin, 2025; Alam, 2026).

Recent studies emphasize that competitiveness within coffee value chains no longer depends solely on production volume but increasingly on the ability of enterprises to undertake process upgrading, product upgrading, functional upgrading, and organizational upgrading. SMEs capable of improving production processes, adopting appropriate technologies, implementing quality assurance systems, and developing product differentiation are more likely to capture higher value-added and expand market access (Kresnawati et al., 2025; Syukur et al., 2025).

Bibliometric evidence also demonstrates that recent coffee value chain research has shifted toward integrated approaches combining sustainability, governance, innovation, digital transformation, and value-added creation. This trend indicates that strengthening coffee SMEs should emphasize not only marketing capability but also improvements in internal operational performance throughout the production process (Suprehatin, 2025; Hanley et al., 2026).

3. Capacity Building for Coffee SMEs

Capacity building has become one of the principal approaches to empowering SMEs because it enables entrepreneurs to improve managerial competence, technical capability, and organizational performance. In coffee enterprises, capacity-building programs commonly include production management training, mentoring, technology transfer, quality assurance, post-harvest handling, financial management, and institutional strengthening (Perwita et al., 2025; Wau et al., 2026).

Recent studies demonstrate that sustainable business improvement is more likely to occur when mentoring programs focus on strengthening internal organizational capability rather than merely providing short-term financial assistance. Technical guidance related to production planning, standard operating procedures (SOPs), workflow organization, equipment maintenance,

and quality control contributes directly to higher production efficiency and business competitiveness (Irfayanti et al., 2025; Setiawan et al., 2026).

Furthermore, current community empowerment initiatives increasingly integrate digital technology, collaborative governance, product traceability, and sustainable production practices into SME development programs. Such integrated approaches enable SMEs to improve operational performance while simultaneously meeting evolving consumer preferences and sustainability standards (Perwita et al., 2025; Hanley et al., 2026).

RESULTS AND DISCUSSION

This section is the main section of a research article and is usually the longest section of an article. Data analysis processes such as statistical calculations and hypothesis testing processes do not need to be presented. Only the results of the analysis and the results of the hypothesis test must be reported. Tables and graphs can be used to clarify the presentation of research results verbally. Tables and graphs should be commented on or discussed.

1. Initial Assessment of Internal Production Capacity

The community service program began with an initial assessment to identify the operational conditions of coffee SMEs in Purbalingga Regency. Field observations, interviews with business owners, and production process mapping revealed that the major constraints were associated with internal production management rather than market demand. Most SMEs had already established stable customer networks; however, their production systems remained inefficient due to limited production planning, inconsistent operating procedures, inadequate quality control, inefficient production layouts, and suboptimal utilization of processing equipment.

These findings indicate that the principal challenge lies in the internal production capability of coffee enterprises. Similar conditions have been reported by Kresnawati et al. (2025), who found that Indonesian coffee SMEs often experience difficulties in upgrading production processes because of limited operational management and technological capability. Likewise, Yusuf et al. (2026) emphasized that internal operational capability has become one of the most critical determinants of competitiveness within the contemporary coffee value chain.

The initial assessment identified several operational weaknesses, as summarized in Table 1.

Table 1. Initial Conditions of Internal Production Capacity

Production Aspect	Initial Condition	Operational Impact
Production planning	No production targets or scheduling	Unstable production volume
Standard Operating Procedures (SOPs)	Not documented	Inconsistent product quality
Quality control	Visual inspection only	Variable product consistency
Production layout	Inefficient workflow	Longer processing time
Equipment utilization	Underutilized roasting and grinding equipment	Lower productivity
Production recording	No production database	Difficult performance evaluation
Inventory management	Manual recording	Raw material inefficiency

These findings demonstrate that strengthening internal production systems should become the primary intervention before expanding marketing activities or increasing production capacity.

2. Strategy for Strengthening Internal Production Capacity

Based on the needs assessment, five integrated strategies were implemented to strengthen the internal production scale of coffee SMEs.

a. Standardization of Production Processes

The first strategy focused on developing and implementing Standard Operating Procedures (SOPs) covering all production stages, including raw material selection, bean sorting, roasting, cooling, grinding, packaging, storage, and sanitation.

The implementation of SOPs reduced process variability and improved production consistency. Standardization also facilitated knowledge transfer among workers while minimizing production errors resulting from individual experience differences. Previous studies have similarly demonstrated that standardized production systems significantly improve operational efficiency and product consistency among coffee SMEs (Irjayanti et al., 2025; Wau et al., 2026).

Furthermore, production standardization contributes to organizational learning because documented procedures establish a systematic operational framework that supports continuous quality improvement (Hanley et al., 2026).

b. Strengthening Quality Control Systems

Quality control became another important component of the intervention because product consistency directly influences customer satisfaction and market competitiveness.

The mentoring program introduced several quality control practices, including standardized raw bean selection, moisture content monitoring, roasting profile consistency, grind size control, packaging inspection, and product storage management.

Following the implementation of these quality assurance measures, business owners demonstrated improved awareness regarding process consistency and defect prevention. This finding supports previous research showing that strengthening quality management systems contributes significantly to higher product quality, increased customer trust, and improved competitiveness within coffee value chains (Kresnawati et al., 2025; Hanley et al., 2026).

c. Capacity Building of Human Resources

The fourth strategy emphasized strengthening human resource capability through technical training and participatory mentoring.

Training activities covered production planning, hygienic processing practices, roasting techniques, machine operation, preventive equipment maintenance, production recording, and quality management. Rather than relying on conventional classroom instruction, the mentoring adopted a participatory learning approach in which SME owners and workers directly applied newly acquired knowledge during daily production activities.

This approach encouraged experiential learning and improved problem-solving capacity among participants. Similar community empowerment programs have reported that participatory mentoring produces stronger behavioral changes than one-time technical training because business owners continuously receive practical guidance throughout the implementation process (Perwita et al., 2025; Wau et al., 2026).

d. Development of Production Performance Monitoring

The final strategy involved establishing a simple production monitoring system to support evidence-based managerial decision-making.

The monitoring system introduced several key performance indicators (KPIs), including:

- 1) daily production output;
- 2) production lead time;
- 3) machine utilization;
- 4) production defect rate;
- 5) raw material utilization;
- 6) labor productivity; and
- 7) percentage of products meeting quality standards.

Routine production recording enabled SMEs to evaluate operational performance continuously and identify opportunities for further improvement. The adoption of performance indicators also strengthened managerial capacity because business decisions became increasingly data-driven rather than experience-based. Recent studies have highlighted that continuous monitoring is essential for sustaining production improvement initiatives among manufacturing SMEs (Irfayanti et al., 2025; Yusuf et al., 2026).

The implementation of these four integrated strategies demonstrates that strengthening internal production capacity extends beyond increasing production volume. Instead, it represents a comprehensive organizational improvement involving production management, operational standardization, quality assurance, human resource development, and continuous performance evaluation.

From the perspective of Global Value Chain (GVC) theory, the intervention primarily supports process upgrading, whereby enterprises improve operational efficiency and production capability without fundamentally changing their core products. Process upgrading enables SMEs to reduce production costs, improve product consistency, and satisfy increasingly demanding market requirements (Kresnawati et al., 2025; Hanley et al., 2026).

At the same time, the intervention aligns with the Resource-Based View (RBV) by strengthening internal organizational resources, including production knowledge, managerial capability, standardized operational routines, and employee competencies. These resources constitute valuable organizational assets that are difficult for competitors to imitate and therefore contribute to sustainable competitive advantage (Irfayanti et al., 2025).

Unlike many previous community service programs that primarily emphasize digital marketing, branding, or product promotion, this program focuses on strengthening internal production capability, which forms the operational foundation of SME competitiveness. Sustainable market expansion can only be achieved when production systems are capable of consistently meeting customer expectations regarding quality, quantity, and delivery reliability.

Overall, the results indicate that strengthening internal production scale improves not only operational efficiency but also organizational learning, production flexibility, product consistency, and long-term business resilience. Consequently, this integrated production strengthening model may serve as a practical framework for developing coffee SMEs in other coffee-producing regions throughout Indonesia.

3. Novelty of the Community Service Program

The novelty of this community service program lies in its integrated approach to strengthening the **internal production scale** of coffee SMEs through four complementary

interventions: (1) production process standardization, (2) quality control enhancement, (3) human resource capacity building, and (4) production performance monitoring. While most recent community empowerment programs in the Indonesian coffee sector have concentrated on branding, digital marketing, product packaging, and market expansion, this program prioritizes the improvement of internal operational capability as the foundation for sustainable competitiveness. This approach contributes to the literature on coffee SME development by demonstrating that operational strengthening represents a critical prerequisite for successful value chain upgrading and long-term business sustainability (Kresnawati et al., 2025; Yusuf et al., 2026; Hanley et al., 2026).

CONCLUSION

This community service program demonstrates that strengthening the internal production scale is a strategic approach to enhancing the operational performance and long-term competitiveness of coffee SMEs in Purbalingga Regency. The initial assessment revealed that the primary challenges faced by the participating SMEs were associated with limited production planning, the absence of standardized operating procedures, inconsistent quality control, inefficient production workflows, underutilization of processing equipment, and inadequate production performance monitoring. These internal constraints reduced production efficiency, limited product consistency, and restricted the SMEs' ability to respond to increasing market demand.

To address these challenges, the program implemented an integrated capacity-building model consisting of five complementary strategies: (1) production process standardization, (2) strengthening quality control systems, (4) human resource capacity development, and (5) establishment of production performance monitoring. The implementation of these strategies enabled SMEs to improve production organization, enhance operational efficiency, strengthen product consistency, and foster a culture of continuous improvement within their production systems.

The discussion confirms that strengthening internal production capability is not merely an operational improvement but also a strategic investment in organizational competitiveness. From the perspective of the Global Value Chain (GVC), the intervention supports process upgrading by improving production efficiency and product quality, thereby increasing the potential of SMEs to participate in higher value-added market segments. Likewise, from the Resource-Based View (RBV), the development of standardized production systems, managerial capability, technical skills, and organizational routines represents valuable internal resources that contribute to sustainable competitive advantage.

The novelty of this community service program lies in its emphasis on strengthening internal production capability as the foundation for SME competitiveness. Unlike many previous community empowerment initiatives that primarily focused on marketing, branding, digital promotion, or product packaging, this program prioritizes the improvement of operational systems that directly determine production performance. Strengthening internal production capacity enables coffee SMEs to achieve greater production consistency, improve quality assurance, optimize resource utilization, and establish a stronger basis for sustainable business growth.

Overall, the findings suggest that an integrated production strengthening model can serve as an effective framework for empowering coffee SMEs in Purbalingga Regency and other coffee-producing regions in Indonesia. Future community service initiatives should extend this model by integrating digital production management, quality certification systems, green production practices, and collaborative partnerships among universities, local governments, cooperatives, and private-sector stakeholders. Such collaborative efforts are expected to accelerate the development

of competitive, resilient, and sustainable coffee SMEs that contribute to inclusive rural economic development.

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